Workshop: 2nd ESA Workshop on Tracking, Telemetry, and Command Systems for Space Applications

Topic: Future TTC Communication Systems

Title: Telemetry, Tracking, and Command Consolidation in the Deep Space Network

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Currently, in NASA's Deep Space Network (DSN), telemetry, tracking, and command (TTC) functions are distributed between multiple subsystems. Control design of these subsystems did not consider the interaction necessary between the functions, which creates opportunities for loss of data. Also, the current

controller design can force the use of equipment that is not needed for the task at hand, to the detriment of other users.

As part of the Network Simplification Project (NSP), the TTC implementation has been re-examined. New telemetry and commanding equipment is being built, and the control of the TTC functions is being consolidated into two controllers, Uplink and Downlink. The new equipment uses commercial components, as opposed to the custom built equipment it is replacing, which improves reliability and simplifies maintenance. The simplified control architecture consolidates the functions that are interdependent and reduces the operational unit to a level that does not waste valuable resources.